Test of Mathematics for University Admission (TMUA)

Cheenta Academy for Olympiad & Research

cheenta.com

Since 2010

Passion for Mathematical Science & Research

This curriculum is for Test of Mathematics for University Admission (TMUA)

Curriculum

Module 1

Logical Reasoning & Problem Solving

10 Lessons

- Translating Verbal Problems into Algebra
- Truth Tables and Logical Connectives
- Conditional, Contrapositive, and Converse Statements
- Deductive and Inductive Reasoning
- Proof by Counterexample
- Pattern Identification and Generalization
- Venn Diagrams and Set Notation
- Boolean Logic and Operations
- Logical Puzzle Structures (Grids, Rules)
- Identifying and Evaluating Flawed Arguments

Module 2

Algebra & Equations

8 Lessons

- Simplifying Algebraic Expressions
- Solving Linear Equations and Inequalities
- Quadratic Equations: Solving & Graphing
- Factorization Techniques
- Simultaneous Equations (Linear/Quadratic)
- Rational Expressions and Algebraic Fractions
- Inequalities: Compound and Rational
- Word Problems with Algebraic Modelling

Module 3

Functions & Graphs

6 Lessons

- Domain and Range of Functions
- Composite and Inverse Functions
- Piecewise and Modulus Functions
- Graph Sketching Basics
- Graph Transformations (Shifts, Stretches, Reflections)
- Interpreting and Comparing Graphs

Module 4

Geometry and Trigonometry

7 Lessons

- Coordinate Geometry: Distance, Midpoint, Gradient
- Equation of a Line and Circle
- Basic Euclidean Geometry: Angles & Triangles
- Circle Theorems and Proofs
- Properties of Polygons
- Basic Trigonometric Ratios
- Trigonometric Identities and Equations

Module 5

Number Theory & Discrete Math

6 Lessons

- Divisibility and Factor Properties
- Prime Numbers and Composite Logic
- GCD and LCM Applications
- Modular Arithmetic
- Parity Arguments (Even/Odd)
- Sequences (Arithmetic, Geometric, Recurrence)

Module 6

Counting, Proof & Argumentation

6 Lessons

- Basic Counting Principles (Addition/Multiplication Rules)
- Permutations and Combinations (Introductory)
- Binomial Theorem and Coefficient Problems
- Direct Proof and Contrapositive
- Proof by Contradiction
- Constructing and Evaluating Mathematical Proofs

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Taught by Olympians

and Researchers from leading universities

Since 2010 Cheenta has evolved into a Gurukul. Our students are in leading universities in India such as Indian Statistical Institute, Chennai Mathematical Institute, TIFR, IITs and universities abroad such as Harvard, MIT, Oxford, Edinburgh to name a few. Some of them returned as teachers for the next generation of learners. And the pursuit of excellence continues.

Cheenta Team has 40+ members. Here are some of the leaders.

Srijit Mukherjee
BStat and MStat from Indian Statistical Institute (India)
Director at Cheenta

Dr. Ashani Dasgupta
PhD from University of Wisconsin-Milwaukee (USA)
Founder - Director at Cheenta

Sanu Shaw
B.Sc. in Mathematics Honours from the University of Calcutta
Secured an All India Rank of 15 in the ISI Entrance Exam (2023)

Raghunath J.V.
B.Tech and M.Tech from IIT Chennai.
Math Olympiad Coach at Cheenta.
INMO and IMO Trainer.

Shayeef Murshid
B.Math and M.Math from ISI
INMO Merit List
Doctoral Scholar at Indian Statistical Institute

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